

WHAT IS CLAIMED IS:

1. A layered board comprising:

a first layer capable of transmitting at least one of an electrical signal and an optical signal;

5 a second layer capable of transmitting at least one of an electrical signal and an optical signal;

an insulating layer interposed between said first layer and said second layer; and

10 a signal connecting path penetrating said insulating layer, said signal connecting path establishing interconnection of the signal between said first layer and said second layer, and said signal connecting path having both a function of transmitting the electrical signal and a function of transmitting the optical signal.

15 2. A layered board according to claim 1, wherein said signal connecting path has both the function of transmitting the electrical signal and the function of transmitting the optical signal in one united body.

20 3. A layered board according to claim 2, wherein a central portion of said signal connecting path has the function of transmitting the electrical signal, and a peripheral portion of said signal connecting path has the function of transmitting the optical signal.

25 4. A layered board according to claim 3, wherein said central portion of said signal connecting path is comprised of an insulating material, or a hollow space.

5. A layered board according to claim 1, further comprising means for interchanging signal transmission through said signal connecting path between transmission of the electrical signal and transmission of the optical signal.

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6. A layered board according to claim 1, wherein said first layer is comprised of an electrical wiring layer.

7. A layered board according to claim 1, further comprising a plurality of electronic devices, said electronic devices being connected to each other through said signal connecting path.

8. A layered board according to claim 7, further comprising an optical device, said electronic device and said signal connecting path being connected to each other through said optical device.

9. A layered board according to claim 8, wherein said optical device has a function of opto-electrical (OE) conversion, or a function of electro-optical (EO) conversion.

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10. A layered board according to claim 1, wherein said first layer is comprised of an optical waveguide layer capable of transmitting the optical signal in a planar manner in said waveguide layer.

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11. A layered board comprising:
an optical waveguide layer capable of transmitting an optical signal in a planar manner in said waveguide layer;

a second layer capable of transmitting at least one of an electrical signal and an optical signal;

an insulating layer interposed between said optical waveguide layer and said second layer;

5 a signal connecting path penetrating said insulating layer, said signal connecting path establishing interconnection of the signal between said optical waveguide layer and said second layer, and said signal connecting path having both a function of transmitting the electrical signal and a function of transmitting the optical signal; and

10 a plurality of electronic devices, said electronic devices being connected to each other through said signal connecting path.

12. A layered board according to claim 11, further comprising a light scattering structure, said light scattering structure being disposed in said
15 optical waveguide layer, and the signal being transmitted between said signal connecting path and said optical waveguide layer through said light scattering structure.

13. An apparatus comprising:

20 a layered board including a first layer capable of transmitting at least one of an electrical signal and an optical signal; a second layer capable of transmitting at least one of an electrical signal and an optical signal; an insulating layer interposed between said first layer and said second layer; and a signal connecting path penetrating said insulating
25 layer, said signal connecting path establishing interconnection of the signal between said first layer and said second layer, and said signal connecting path having both a function of transmitting the electrical signal and a

function of transmitting the optical signal;

means for transmitting and receiving a high-frequency signal; and

means for processing the signal.

- 5 14. An apparatus according to claim 13, wherein said apparatus is constructed as a cellular phone.

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